

Sensors

Extreme Heat Resistant Ultraviolet and Infrared Sensor

Transmission to and protection of ultraviolet and
infrared radiation sensors in extreme heat environments

NASA Langley Research Center has developed an ultraviolet and infrared radiation sensor system that can operate in extreme heat environments. The system was originally developed to monitor temperature and radiation during spacecraft re-entry. Thus, the design is survivable in a vacuum and can withstand temperatures over 3,500 Fahrenheit.

BENEFITS

- ➔ Survivable in extreme heat, greater than 3,500 Fahrenheit
- ➔ Novel ceramic cone and window materials resist interference from char

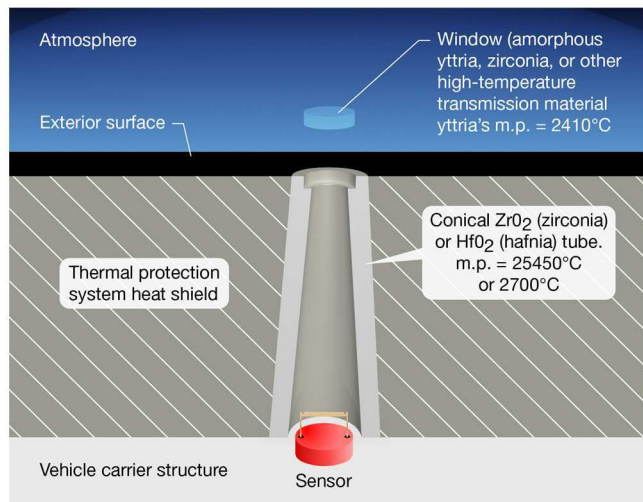
technology solution

NASA Technology Transfer Program

Bringing NASA Technology Down to Earth

THE TECHNOLOGY

The sensor system is designed to measure wavelengths ranging from a low limit of 180 or 200 nanometers in the ultraviolet through the infrared region of the electromagnetic region. The sensor system employs a cone-shaped ceramic conduit that is tipped with a transparent, amorphous, high-melting temperature window with high toughness. In a spacecraft reentry application, the sensor window is designed to remain above an ablating heat shield and thus not collect char that would otherwise interfere with measurements. The window material is custom tailored for the specific application of the technology, but in general is designed with a high melt-point and to minimize char interference.



Drawing of technology

APPLICATIONS

The technology has several potential applications:

- ➡ Spacecraft
- ➡ Hypersonic flight vehicles
- ➡ Wind tunnel simulations
- ➡ Automotive engine components

PUBLICATIONS

Patent No: 7,742,663

National Aeronautics and Space Administration

The Technology Gateway

Langley Research Center

Mail Stop 151
Hampton, VA 23681
757-864-1178
LARC-DL-technologygateway@mail.nasa.gov

<http://technology.nasa.gov/>

www.nasa.gov

NP-2015-06-1927-HQ

NASA's Technology Transfer Program pursues the widest possible applications of agency technology to benefit US citizens. Through partnerships and licensing agreements with industry, the program ensures that NASA's investments in pioneering research find secondary uses that benefit the economy, create jobs, and improve quality of life.

LAR-17576-1

